

### **Abstract**

Joint channel estimation and maximum likelihood decoding method for Coded Orthogonal Frequency Division Multiplexing (COFDM) systems are presented. Using this method in conjunction with convolutional coding, robust and nearly optimal coherent  
 5 detection can be achieved in rapid dispersive fading channels. Significant performance gain in packet data throughput is realized in a system with aggressive frequency reuse. A method for estimating channel characteristics in a multicarrier transmission system comprising the steps of receiving a multicarrier signal, applying Fast Fourier transformations to the multicarrier signal, estimating channel characteristics of a multicarrier channel over which  
 10 the multicarrier signal was transmitted using a combination of iterative processing and iterative backward processing, and decoding the transformed multicarrier signal is presented.